



Study of a plate of the magnetocaloric material $\text{La}(\text{Fe},\text{Co},\text{Si})_{13}$

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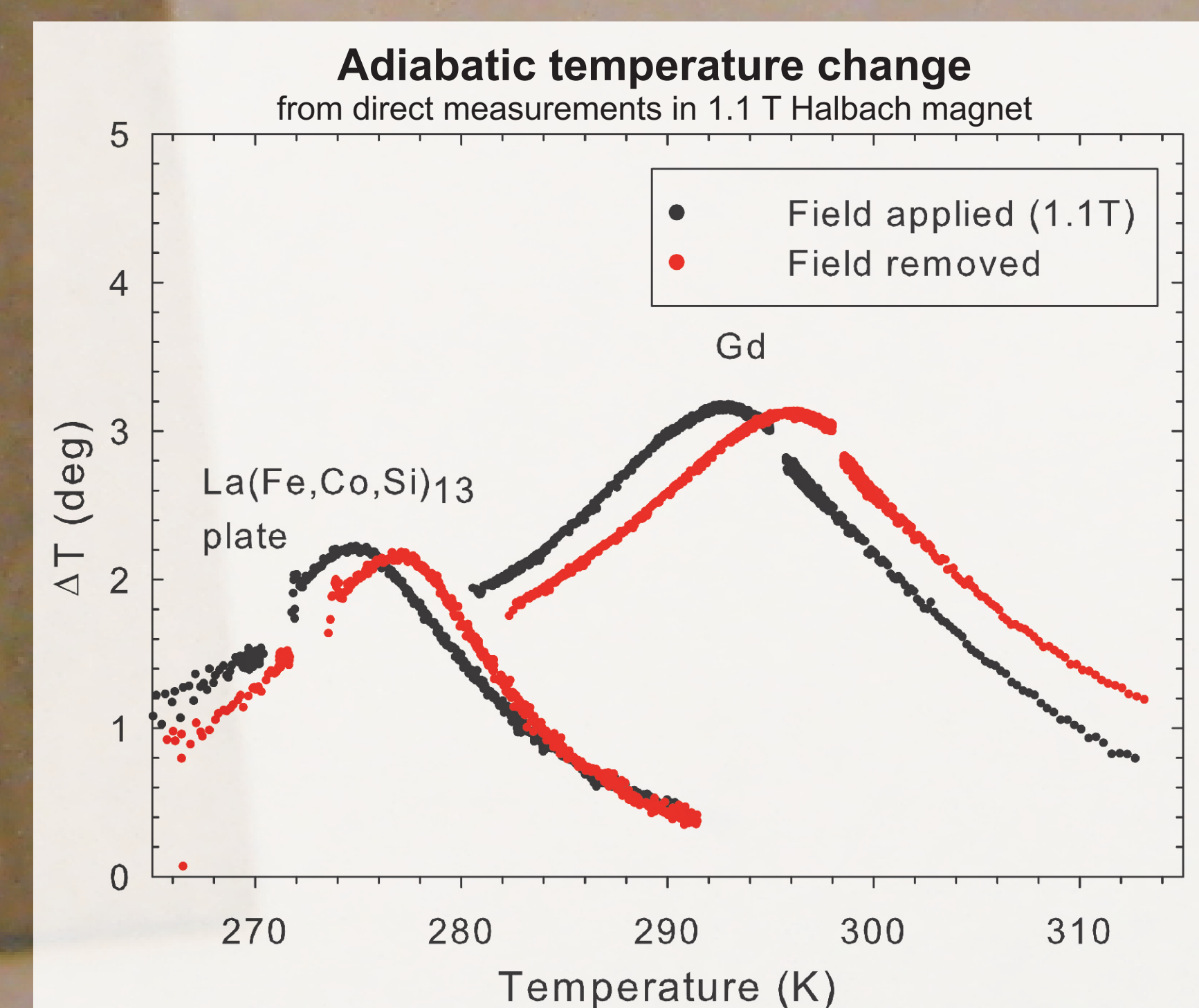
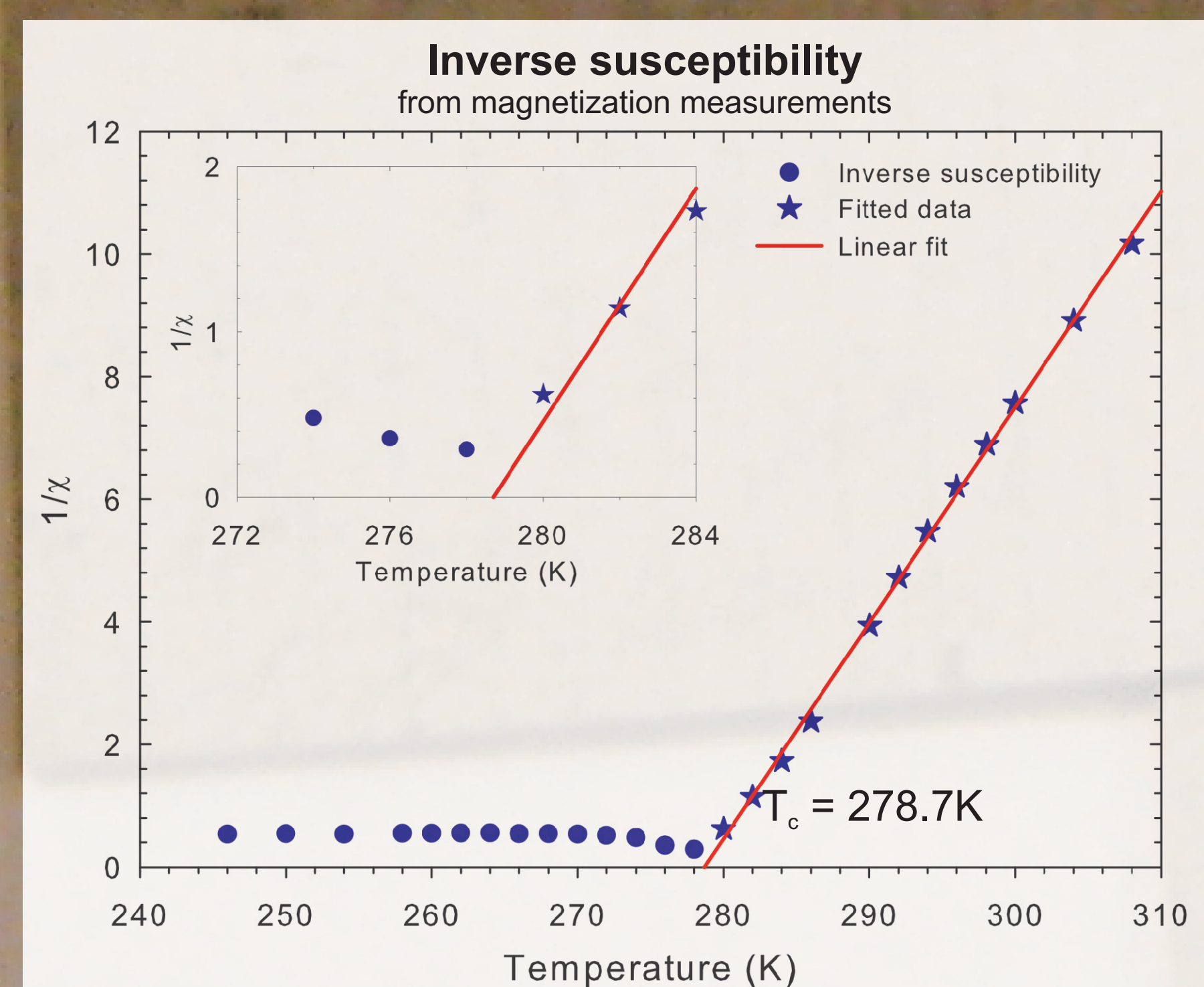
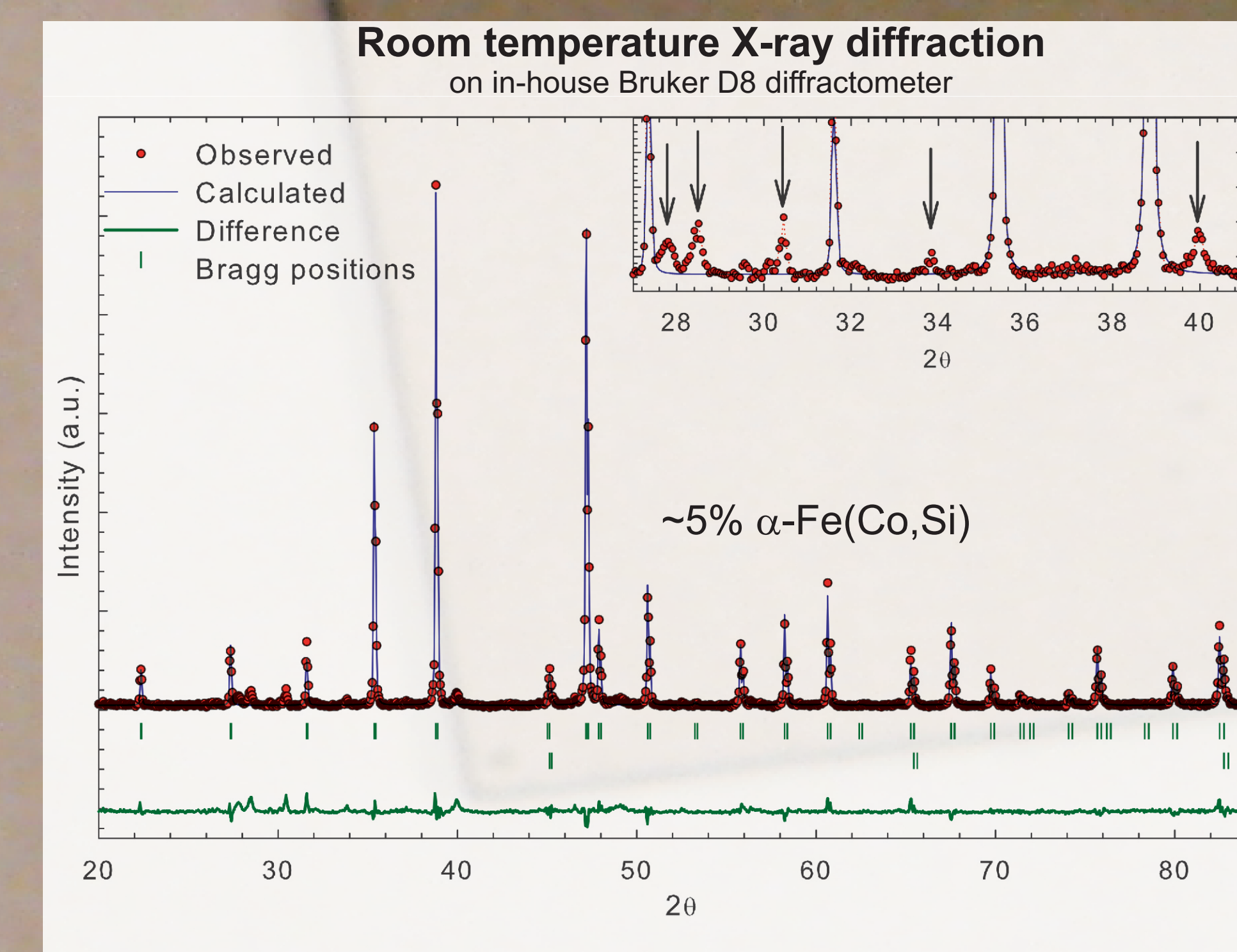
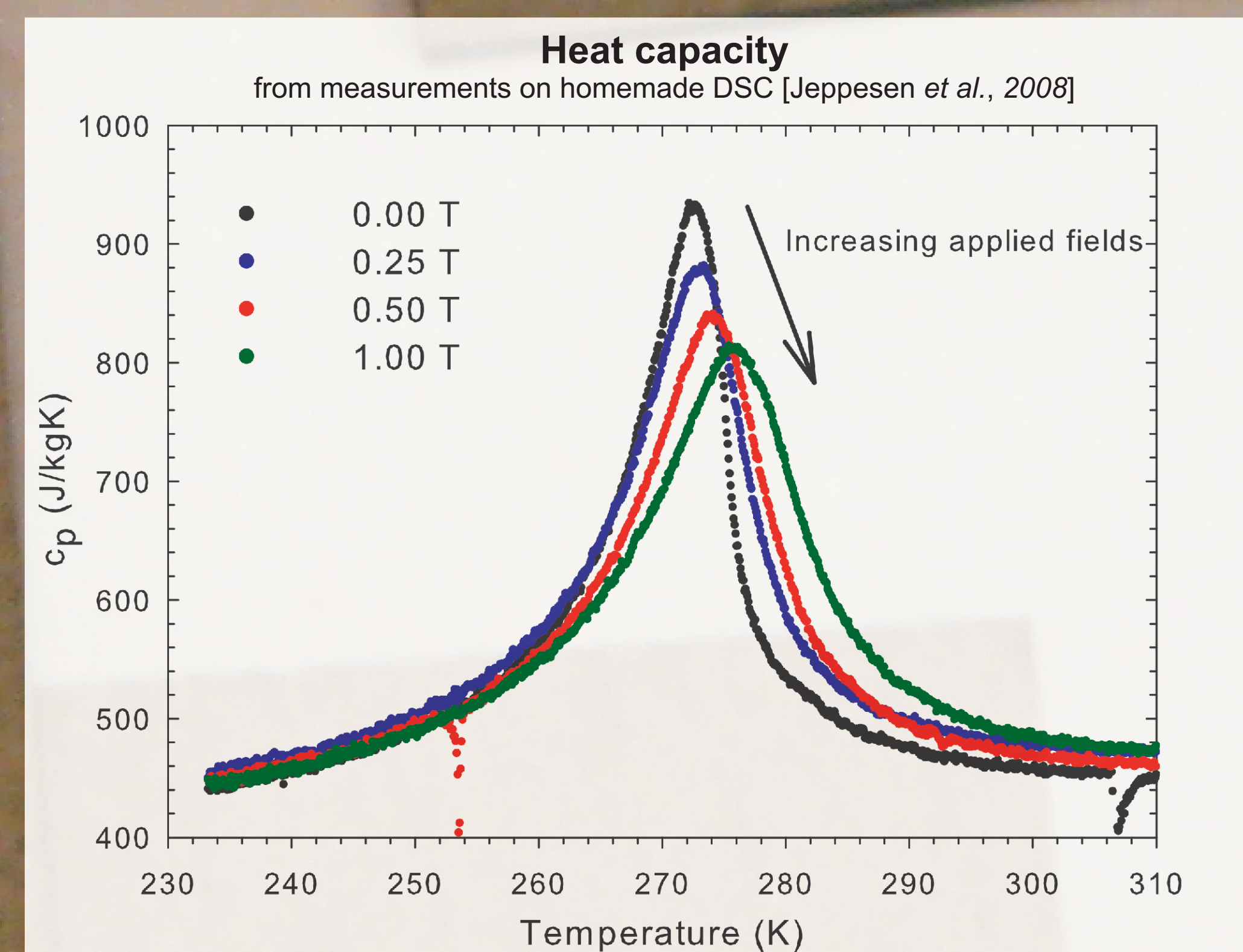
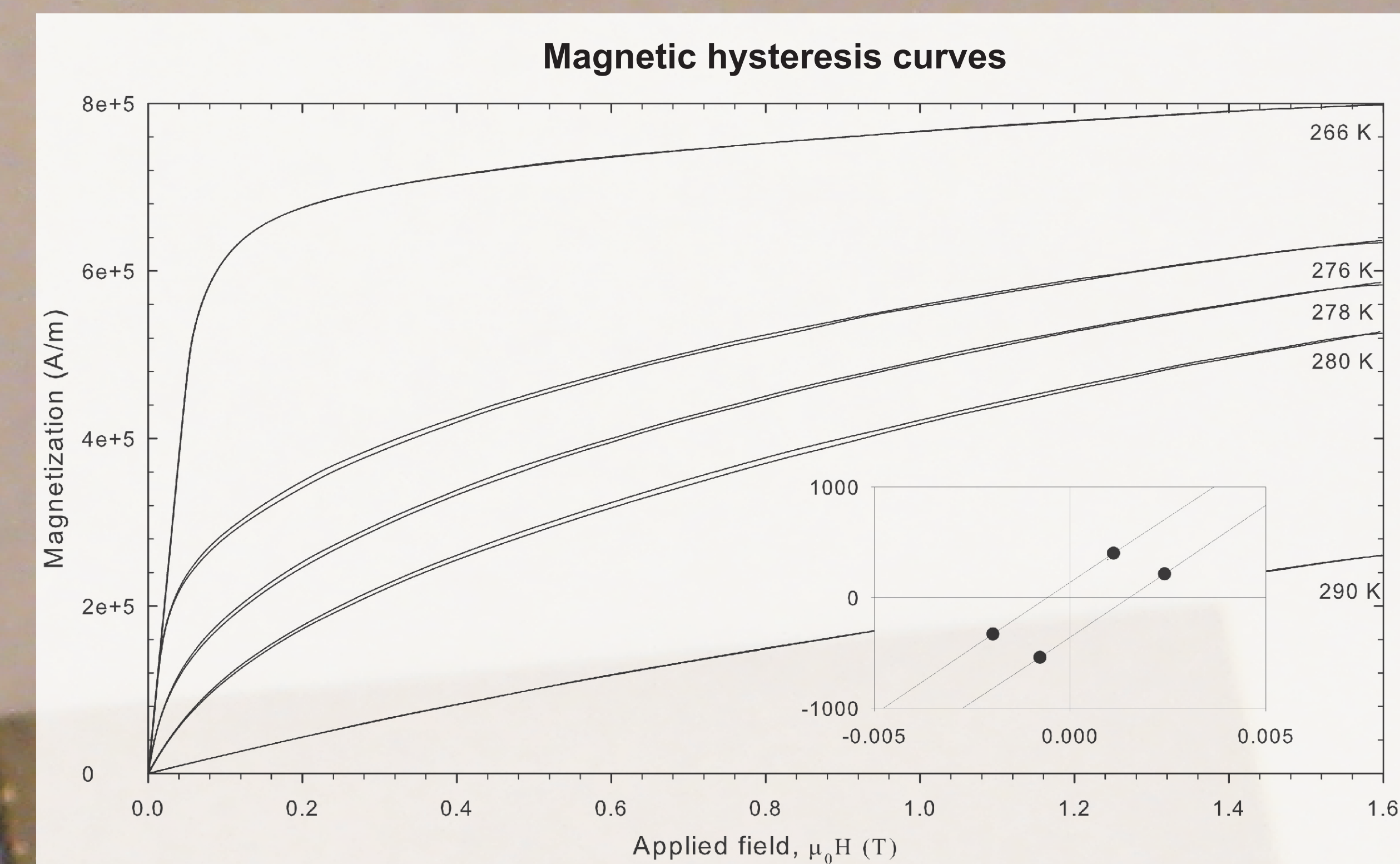
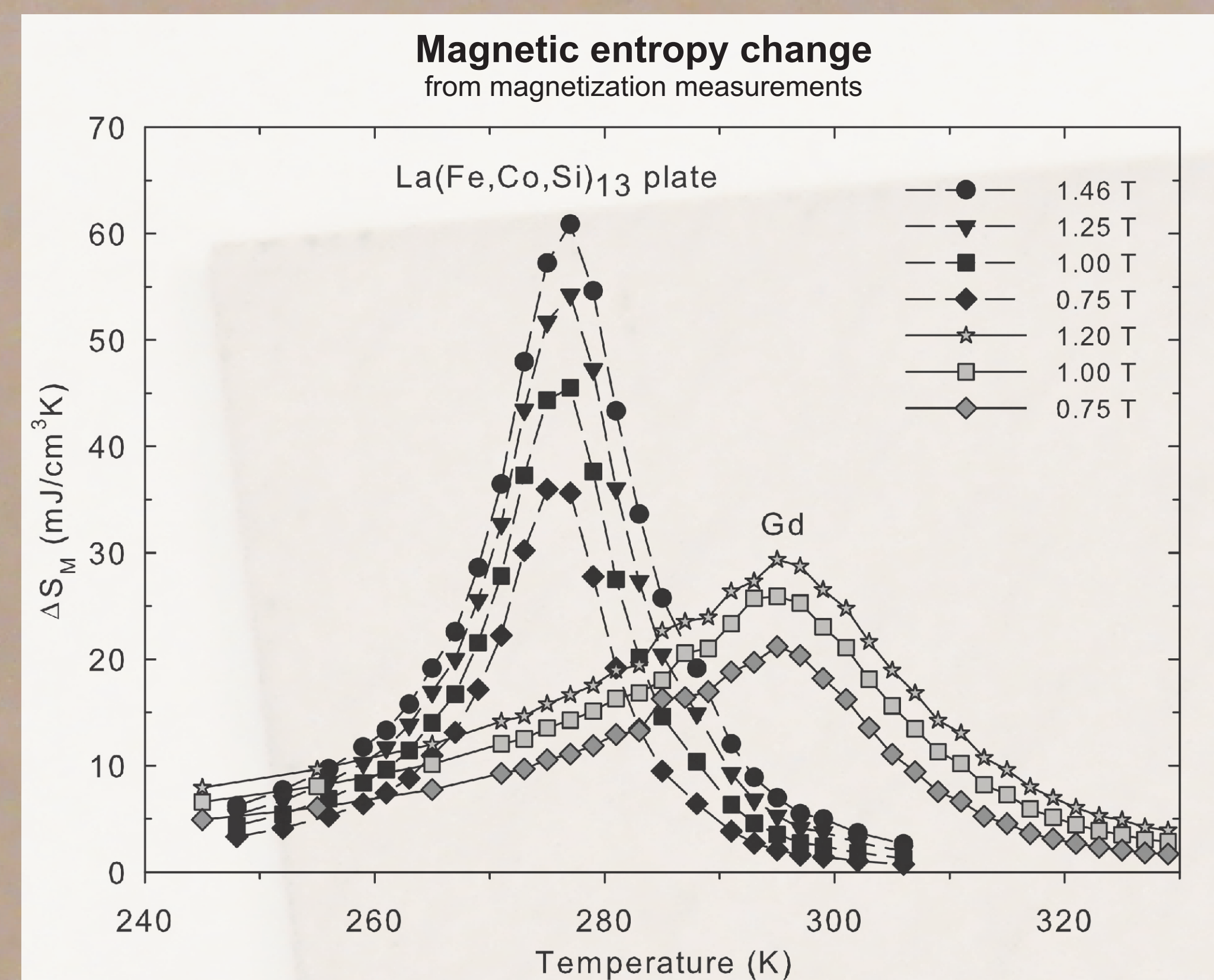
Study of a plate of the magnetocaloric material $\text{La}(\text{Fe},\text{Co},\text{Si})_{13}$

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MagCool project

| Properties | |
|--------------------------------|--|
| $\Delta S_M(\Delta H, T)$ | Significantly larger than that of Gd |
| $\Delta T_{ad}(\Delta H, T)$ | ~2K for 1.1T applied (Gd ~3K) |
| Tunability of T_c | Yes |
| Raw material costs | Low |
| Fabrication (sheet) | Yes |
| Large scale production | Possible with powder metallurgy [Katter <i>et al.</i> , 2008] |
| Hysteresis | None |
| Environmental concerns | None |
| Corrosion | Heavy corrosion in pure water. Greatly reduced in anti-freeze if sealed off from air. |
| Friability (brittleness) | Significant |
| | |
| Plate dimensions | 20 x 25 x 0.9 mm |
| Nominal composition (from XFA) | $\text{La}(\text{Fe}_{0.851}\text{Co}_{0.066}\text{Si}_{0.083})_{13}$ |



References

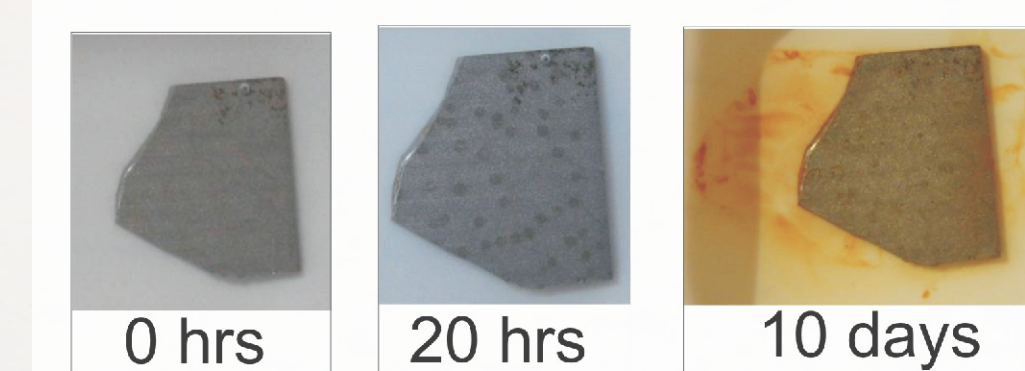
Hansen *et al.* 2009, Thermag III Conference Proceedings.
Jeppesen *et al.* 2008, Rev. Sci. Instrum. 79(8): 083901.
Katter *et al.*, 2008, IEEE Trans. Magn. 44: 3044-3047.

Corrosion

Demineralized water



Anti-freeze, open container



Anti-freeze, sealed container

